



SUBMARINE MEDICINE



Dear Doctor:

I am pleased to invite your attention to one of the most fascinating of the Navy's military medical specialties, Submarine Medicine.

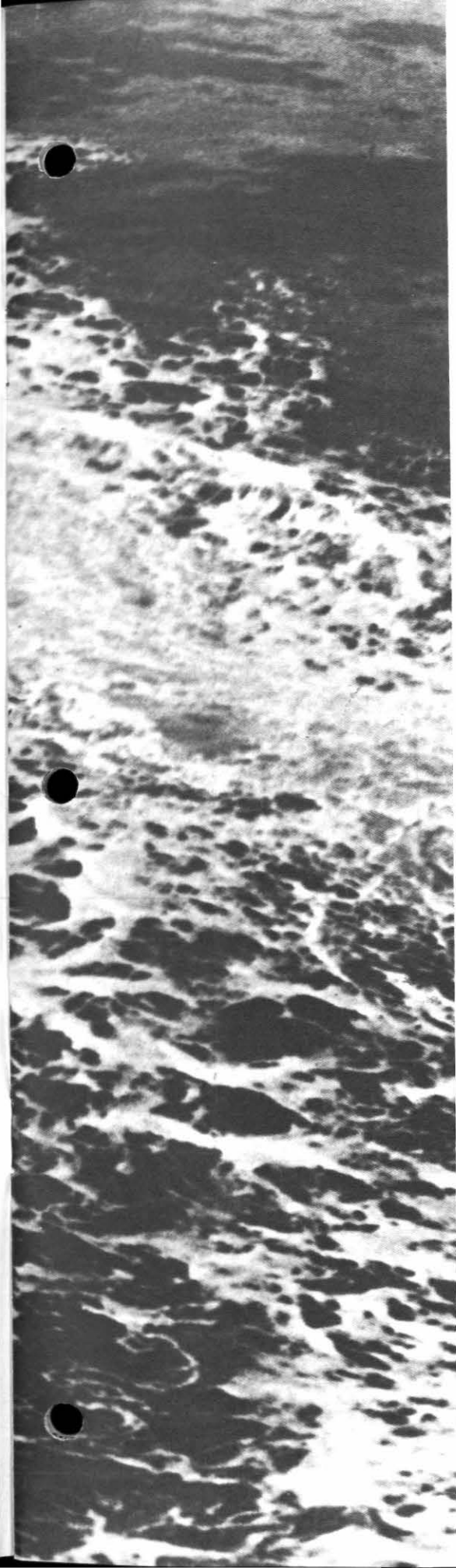
The growth of the nuclear submarine fleet and the Navy's increasing emphasis on underwater exploration have created many problems regarding man's physiological and psychological limitations in an underwater environment. As a result, there is a greater need for physicians specially trained in the many facets of underwater medicine to provide technical support to submarine and diving personnel. The opportunities of such a challenging program are worth your consideration.

I am sure that you would find duty as a Submarine Medical Officer richly rewarding.

Sincerely yours,



R. B. BROWN
Vice Admiral, MC, USN
Surgeon General



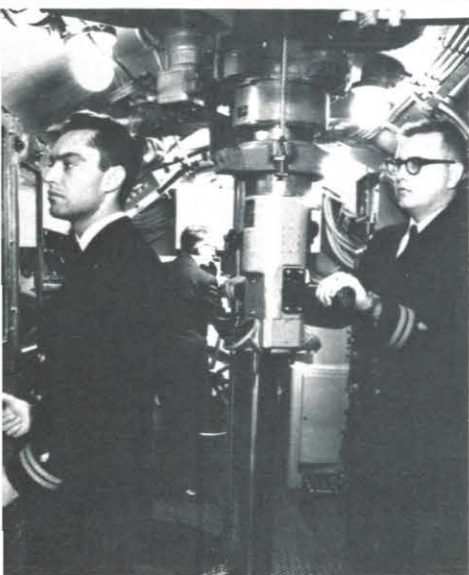
Submarine Medicine is the unique yet unusually diverse specialty that supports all underwater operations of the Navy. As a specialty, its recent growth parallels development of the nuclear submarine fleet and the large scale interest in oceanographic exploration.

In just a decade the field of Submarine Medicine has expanded greatly in scope, activity, and personnel. The blending of biological and physical sciences has led to new concepts in underwater and closed-environment physiology and psychology. Today, access to unpenetrated regions is restricted largely by environmental conditions; the destiny of intra-marine environmental exploration is an important part of the future of Submarine Medicine.

To become a Submarine Medical Officer, a physician must qualify in a variety of subjects including diving medicine, submarine medicine, radiobiology, respiratory physiology and atmosphere control. He must also have a basic technical knowledge of submarine construction and operation. In practice Submarine Medicine is a broad discipline combining aspects of general practice and occupational medicine.

Like all underwater activities in the Navy, the Submarine Medicine Program is a volunteer organization. In working with the mature and progressive men of the Submarine Service, the Medical Officer finds his professional and personal life intangibly enriched.

Approximately 120 Submarine Medical Officer billets exist. Because of the relatively small size of this select group, it is usually possible to give consideration to individual desires and capabilities in making duty assignments, regardless of race, creed, or national origin.



Twice yearly—in January and July—the six month course in Submarine Medicine convenes at the U. S. Naval Submarine Medical Center located at the Submarine Base in New London, Connecticut. During this time, prospective Submarine Medical Officers are fully oriented and prepared for duty in submarine and diving billets.

The School's staff prepares the curriculum and implements the course of instruction. Guest lecturers are drawn from other activities: the Bureau of Medicine and Surgery, the Deep Sea Diving School, U. S. Naval Research Laboratory, Brookhaven National Radiation Laboratory, Naval Preventive Medicine Units, Yale and Columbia University Medical Schools, and Harvard University's School of Public Health. The Submarine Medical Center's Research Laboratory and the Officers' Submarine School at the New London Submarine Base provide additional instruction.

SCHOOL OF

Practical training in "hard hat" diving is given on board local submarine rescue ships and from a diving barge. Escape training, pressure chamber indoctrination, and SCUBA instruction is conducted in the Submarine School's escape training tank. During the course of instruction, students rotate in the Emergency Room watch schedule at the Submarine Base Hospital in order to maintain their clinical proficiency.

The training received in Submarine Medicine has been accepted on an individual basis by several specialty boards including the American Board of Internal Medicine, the American Board of Anesthesiology, and the American Board of Preventive Medicine as partial fulfillment of their requirements for certification.

The course of instruction is divided into five phases:

a. **Naval Orientation:** This section is designed to provide the new medical officer with a background in pertinent Naval details such as uniforms, Naval Regulations, honors, ceremonies, correspondence and administrative matters.

b. **Basic Submarine School:** This phase of the course is given at the Officers' Submarine School. It is a four week abbreviation of the six month basic officer's course, covering submarine machinery, electrical and electronic systems, weaponry, tactics, submerged submarine control, all phases of submarine escape training, and underway time aboard submarines.

c. **Diving Medicine:** This portion of the course presents basic diving physics, the physiological hazards of diving, the management of diving casualties, underwater physiology, the selection of diving personnel, current diving research, and practical work including chamber operation, deep sea (helmet) diving and SCUBA diving.

d. **Nuclear Medicine:** This section consists primarily of nuclear physics lectures and includes the mathematical background necessary for a basic understanding of the course. Health physics, photodosimetry, radiobiology, and reactor plant technology are also included.

e. **Submarine Medicine:** This segment applies to the more limited field of submarine medicine as practiced aboard the submarine itself, and includes medical department administration, physical selection and assessment of submarine personnel, preventive medicine and submarine sanitation, submarine atmosphere control and toxicology, and medical and surgical specialties: dentistry, audiology, ophthalmology, psychiatry, anesthesiology, general surgery, neurosurgery, orthopedics, internal medicine, and radiology.



SUBMARINE MEDICINE

SUBMARINE MEDICAL OFFICERS' COURSE SCHOOL OF SUBMARINE MEDICINE

SUBJECTS	HOURS
Naval Orientation and Administration	36
Basic Submarine School	114
Diving Medicine	218
Nuclear Medicine	227
Submarine Medicine	166
Medical Department Administration	12
Medical and Surgical Specialties	98
Atmosphere Control and Toxicology	40
Preventive Medicine and Sanitation	16
NBC Warfare	11
TOTAL HOURS	772



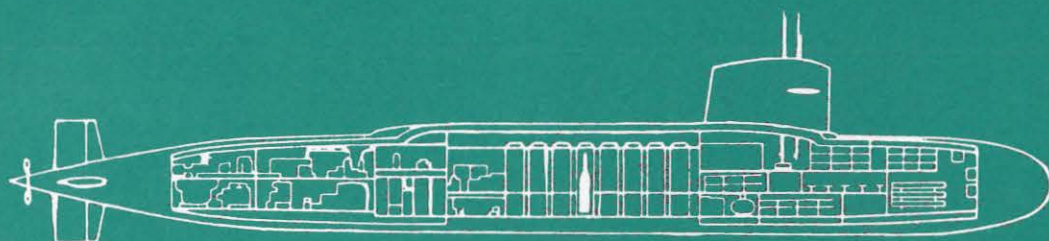
POLARIS PROGRAM

The Navy's highest priority program is the Fleet Ballistic Missile, or POLARIS program. Each FBM submarine has two complete crews designated as "Blue" and "Gold." Because of the unique mission and nature of the patrols, a medical officer is assigned to each crew. This 41 ship armada creates the greatest single demand for Submarine Medical Officers.

The POLARIS physician manages the medical care of the 130 man crew during patrols. A completely equipped sick bay is at his disposal and, should the need arise, the crews' mess can be converted into an adequately equipped emergency operating room. He also advises the Commanding Officer on atmosphere control and radiation protection.

While one crew is on patrol, the other remains ashore at the home port for refresher training and leave. These are alternating three month cycles. The medical officer spends a portion of this time working at the local off-crew clinical activity on the service of his choice. Another time period is available for short post-graduate courses given at an institution of the physician's choice within the general area of his homeport. Ample time is also provided for leave, which may be taken in the United States, Europe or the Far East, depending on homeport location. FBM homeports and corresponding operational ports are as follows: New London, Connecticut—Holy Loch, Scotland; Charleston, South Carolina—Rota, Spain; and Pearl Harbor, Hawaii—Guam.

The medical officer who serves with a POLARIS crew must be a highly trained, competent physician, capable of standing alone professionally on the extended patrols. In this self-contained, isolated environment, he must handle all medical situations within patrol restrictions. He must exercise ingenuity, flexibility, and a high degree of professional skill to ensure the success of his patrol and the entire POLARIS program.



A Submarine Squadron Medical Officer is responsible for the over-all medical care of approximately 2200 officers and men. The squadron includes a submarine tender containing a complex of specialized repair facilities and a 35 bed hospital with modern laboratory and X-ray facilities. An important component of the squadron physician's work involves medical supervision of divers assigned to the squadron—this includes periodic qualification testing of all divers and the immediate availability of the physician during certain diving operations.

In general, squadron billets are assigned to medical officers who have completed a tour of POLARIS patrol duty. There are three types of submarine squadrons. An FBM squadron consists entirely of nuclear-powered, ballistic missile-firing submarines. Other squadrons consist of nuclear-powered and diesel-powered attack submarines; others are made up entirely of conventional submarines. Squadron locations are: New London, Connecticut; Norfolk, Virginia; Charleston, South Carolina; Key West, Florida; San Diego, California; Pearl Harbor, Hawaii; Guam, Mariana Islands; Holy Loch, Scotland; and Rota, Spain.



SUBMARINE SQUADRONS

A black and white photograph showing a diver in a full-body suit and helmet being hoisted by several ropes. Two men on the ground are pulling the ropes. The diver is suspended in the air, and the ropes are attached to a pulley system above. The background is a plain, light color.

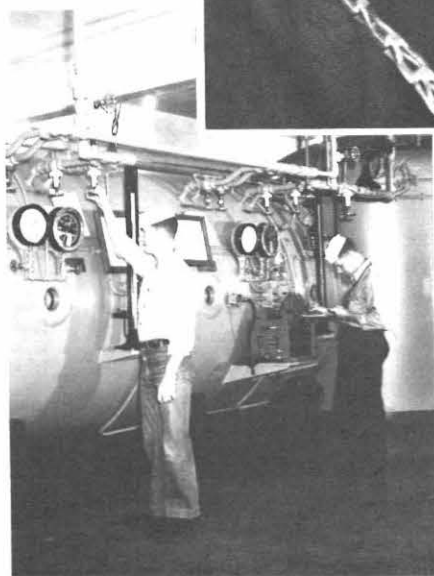
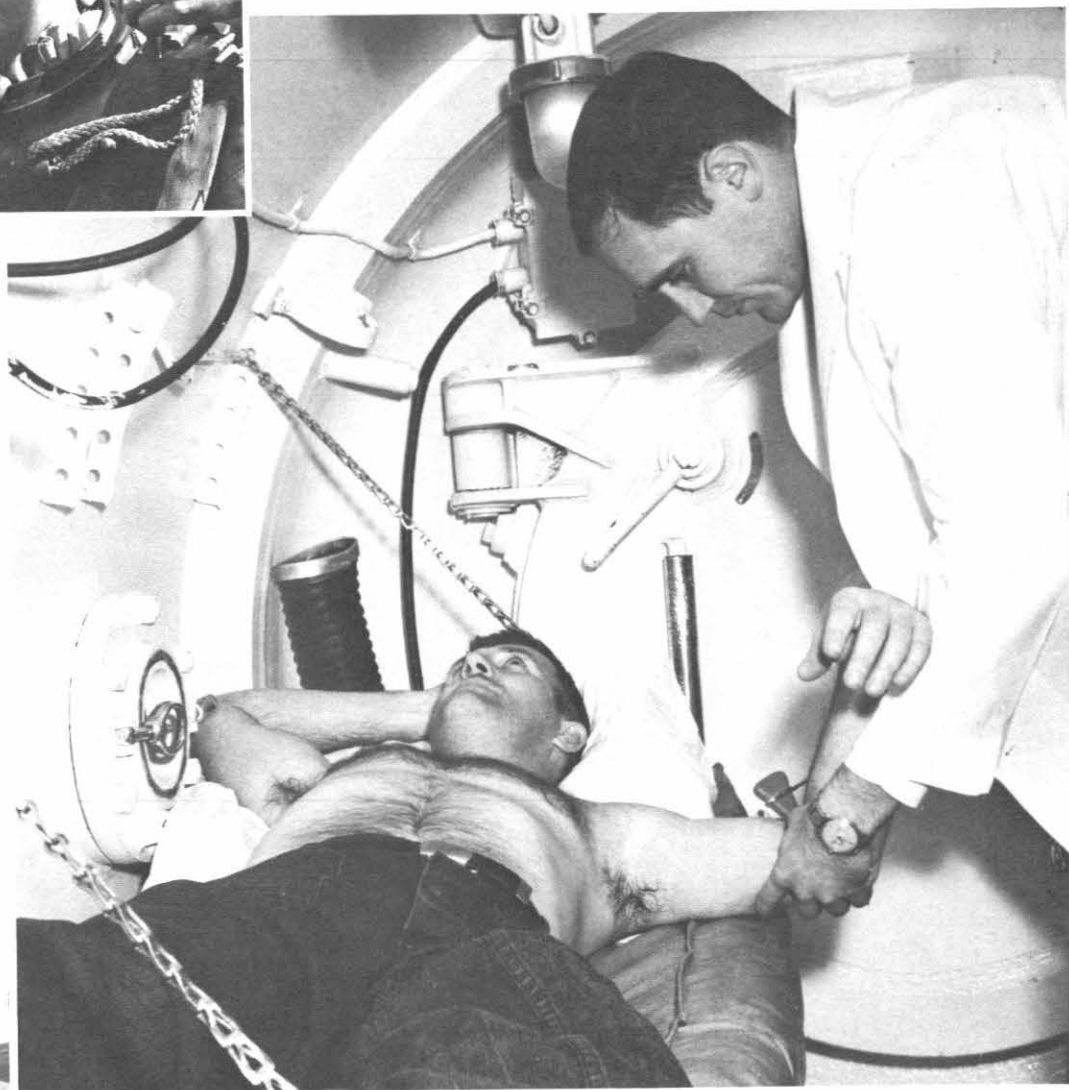
EXPERIMENTAL DIVING UNIT

Medical Officers assigned to the Navy Experimental Diving Unit (EDU) perform experimental work in diving physiology and related areas of interest. The unit evaluates diving equipment for use in deep sea diving and underwater swimming, in addition to developing and perfecting diving methods and procedures. The EDU research program includes the study of high oxygen tensions under various conditions; experimental validation of decompression theory; the use of helium in mixed gas SCUBA; the effects of varying physical and physiological conditions on carbon dioxide elimination, oxygen toxicity, inert gas narcosis, and other problems related to diving.

Facilities are located at the U. S. Naval Station in Washington, D.C. The chamber complexes have a working pressure equivalent to a maximum depth of 1000 feet of sea water. The recompression chambers can be converted for high altitude studies.

NAVAL SCHOOL, DEEP SEA DIVERS

Submarine Medical Officers assigned to the Naval School of Deep Sea Divers are primarily engaged in providing intensive instruction in diving physics and physiology to selected officer and enlisted personnel. The training facility includes two chamber complexes, two open tanks for evaluation and training dives, and four diving craft. The school is located adjacent to Experimental Diving Unit facilities at the Naval Station, Washington, D.C.





SCUBA

Submarine Medical Officers are assigned to billets with the Navy's "SCUBA College," the Underwater Swimmers' School in Key West, Florida, and to Underwater Demolition Teams on both coasts. At the Underwater Swimmers' School the physician participates in the training program and provides medical care for the staff, students and their dependents. Duty with Underwater Demolition Teams is similar.



RESEARCH AND CLINICAL

Research and teaching in the Submarine Medical Center, San Diego, includes programs in respiratory physiology and clinical medicine. Submarine Medical Officers assigned to the center participate in research and clinical work.

Submarine research and clinical work is also done at the Experimental Diving Laboratory, Naval Submarine Medical Research Institute, Groton, Connecticut.



UNDERSEA EXPLORATION

Under the broad scope of the Deep Submergence Systems Project the Navy has embarked upon a research and development program to increase its capabilities in deep ocean technology. An important part of this program is the Man-In-The-Sea project, whose ultimate objective is the performance of useful work at depths in excess of 600 feet for extended periods of time. Submarine Medical Officers have had increasingly prominent roles in the development and execution of each progressive SEALAB project. Continuing research and exploration in the undersea frontier will create an even greater need for participation by Navy physicians trained in the many-faceted discipline that is submarine and diving medicine.

RESEARCH, TEACHING, CLINICAL MEDICINE

In all phases of Submarine Medicine and in the clinical specialties is practiced at the Naval Submarine Medical School, Groton, Connecticut. Training of Submarine Medical Officers, research in physiology, and assessment of personnel for submarine duty are of primary importance. Officers assigned to the school have additional duty at the Submarine Escape Training Tank. The Naval Submarine Medical School is also located at the Naval Medical Research Institute, Bethesda, Maryland, and the Naval Submarine Medical Unit, Washington, D.C.





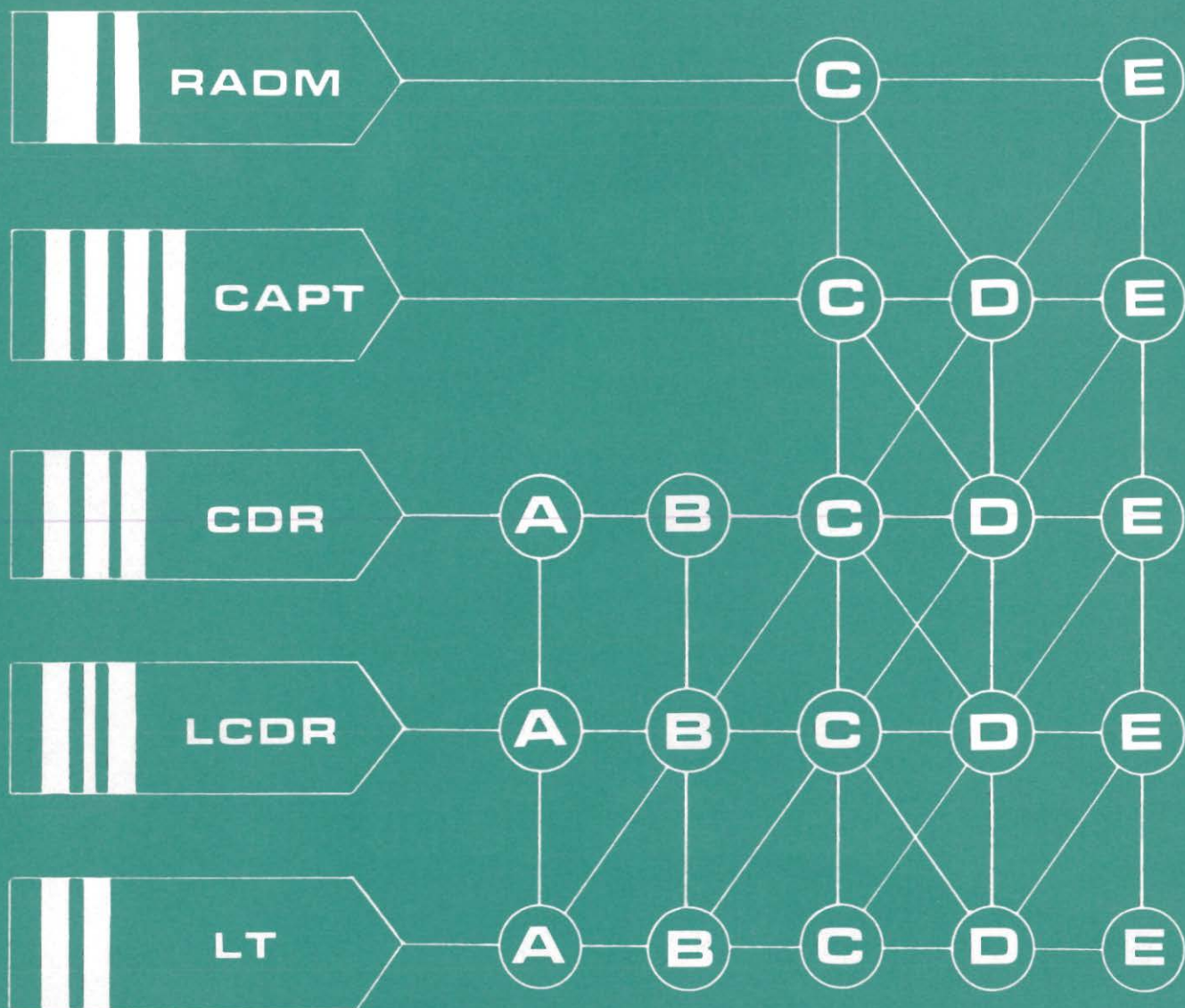
RECREATIONAL OPPORTUNITIES



Duty as a Submarine Medical Officer may well take the Navy physician to the far corners of the world. Usually an adventuresome sort, he will make the most of every opportunity presented by his locale . . . perhaps surfing in Hawaii, attending Highland Games in Scotland, or a bullfight in Spain. Leave periods will enable him to travel further . . . to Europe and the Orient . . . often on military flights. Tours of duty outside the continental United States are usually for two years allowing the medical officer's dependents to accompany him.



CAREER OPPORTUNITIES





SUBMARINE MEDICAL INSIGNIA

The insignia of the Submarine Medical Service is the oak leaf of the Medical Corps flanked by two dolphins. Traditional attendants of Poseidon, Greek God of the Sea and patron diety of sailors, dolphins are symbolic of a calm sea.

To wear the medical dolphins, a Submarine Medical Officer must be a graduate of a prescribed course in Submarine Medicine, serve in a submarine or diving billet for three months, prepare an acceptable thesis relevant to Submarine Medicine and pass a comprehensive examination. He then becomes a "Qualified Submarine Medical Officer" and is eligible to fill any billet in Submarine Medicine.

A variety of assignments are available to the Submarine Medical Officer following a tour of duty aboard a submarine or diving activity. Training in Submarine Medicine is particularly applicable to those having an interest in occupational medicine, radiobiology respiratory physiology, or related research. Experienced Submarine Medical Officers are urged to apply for post-graduate or residency training. Numerous programs leading to advanced degrees are available, including specialized training in diving medicine and underwater physiology at the University of Pennsylvania and the University of Buffalo. The University of Rochester offers an advanced course in radiobiology. Naval residency training in all major clinical specialties including public health and occupational medicine is available.

A—School of Submarine Medicine (Student)

B—Submarine Assignment

C—Staff, Submarine, Diving or Research Activity

LT —Squadron Medical Officer; UDT; Underwater Swimmers School; Deep Sea Diving School; Submarine Medical Center.

LCDR—Squadron Medical Officer; Submarine Medical Center; Bureau of Medicine and Surgery; Experimental Diving Unit; Deep Sea Diving School.

CDR —Squadron Medical Officer; Flotilla Medical Officer; Department Head, Submarine Medical Center; Bureau of Medicine and Surgery; Experimental Diving Unit; Deep Sea Diving School.

CAPT —Force Medical Officer; Commanding Officer, Submarine Medical Center; Bureau of Medicine and Surgery; Senior Medical Officer, Experimental Diving Unit; Chief of Clinical Services, Submarine Medical Center; Director, Research Activity.

RADM—Assistant Chief, Bureau of Medicine and Surgery.

D—Post-graduate or Clinical Residency Training.

E—Clinical Duty (Post-residency).



Medical Officers assigned to duty on board a submarine or to a submarine squadron staff are entitled to receive submarine pay, in addition to all other compensation. The amount of submarine pay received varies with rank and time in service. The details of this are given in the following table:

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Medical Officers attached to the Deep Sea Diving School, Experimental Diving Unit, Underwater Demolition Teams, Underwater Swimmers' School, and with additional duty orders to the Submarine Escape Training Tanks or other diving research billets receive extra compensation at the rate of \$110.00 per month. An addendum to this brochure shows the latest pay scales for a Career Physician in the U. S. Navy.

OBLIGATED SERVICE

The obligated service requirement for attending the course is an agreement to remain on active duty for six months in addition to the basic obligation, or for 24 months after completion of the course, whichever is longer.



SUBMISSION OF APPLICATIONS

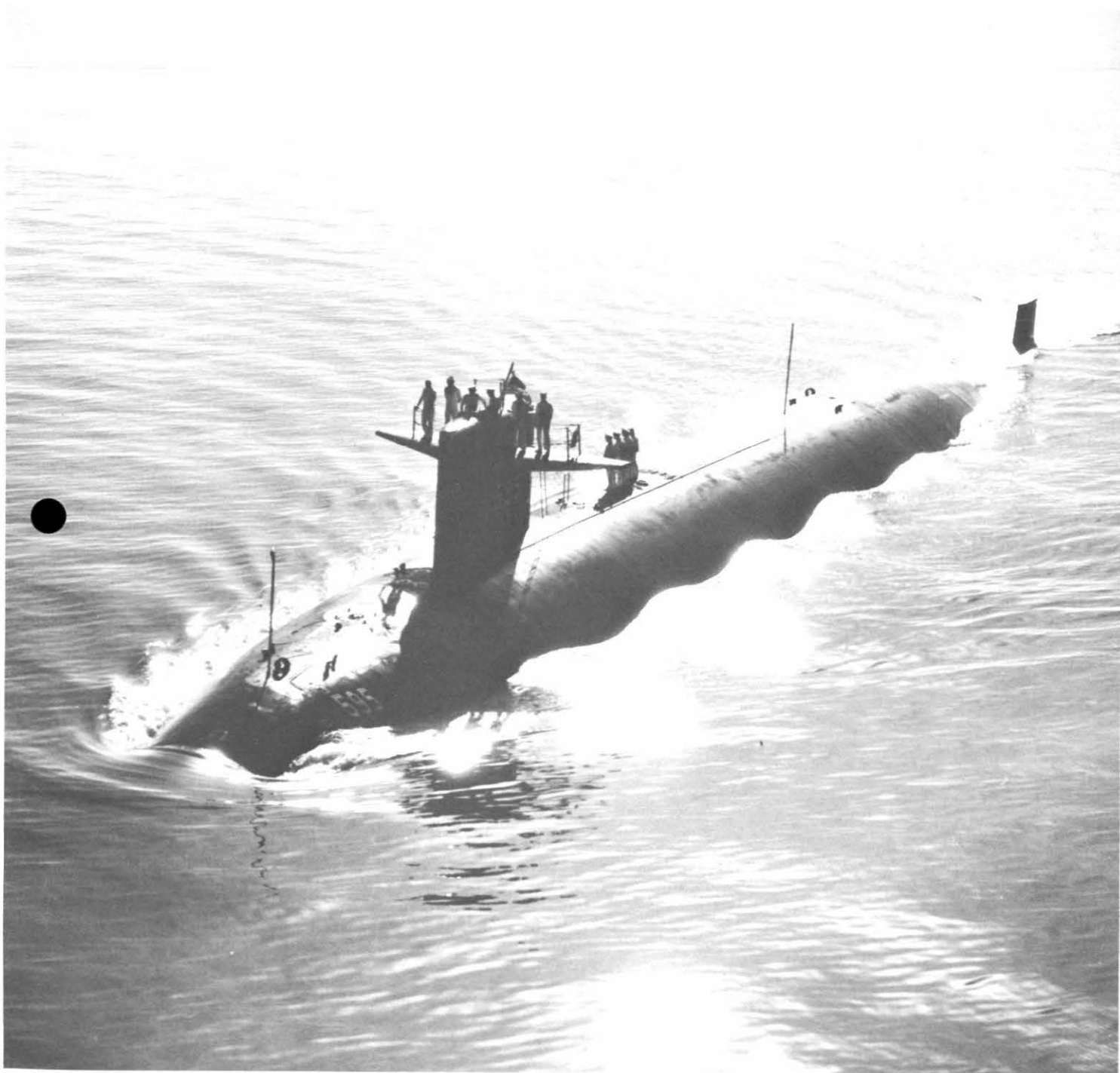


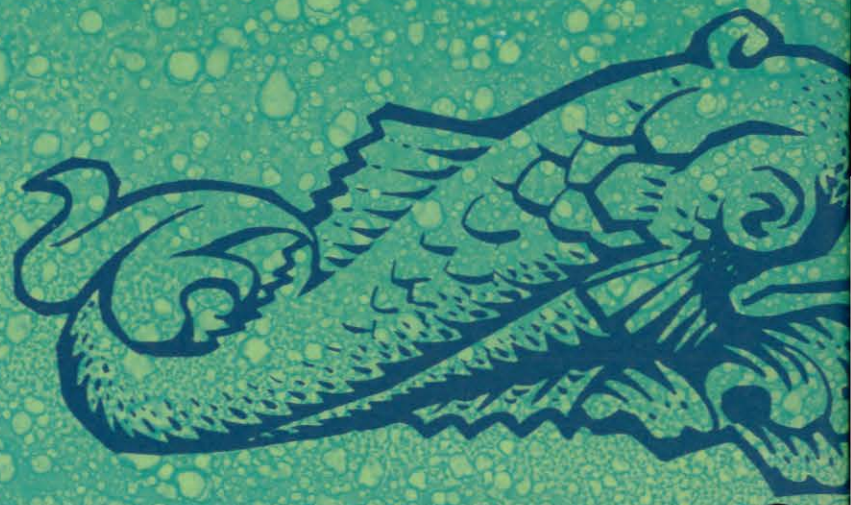
Applications for assignment to the course of instruction in Submarine Medicine should be made by official letter to the Chief, Bureau of Medicine and Surgery, stating the convening date desired and containing the obligated service agreement which in substance states that you agree to serve on active duty for 24 months following completion of the training course or six months beyond your current obligated service, whichever is longer.

Prior to consideration of a request for Submarine Medicine training it is necessary to initiate an application for a commission in the Navy Medical Corps. For information concerning a naval commission contact the nearest U. S. Navy Recruiting Station.

If you desire additional information regarding the Submarine Medicine Program, address inquiries to:

Director, Submarine and
Radiation Medicine Division
Bureau of Medicine and Surgery
Washington, D.C. 20390





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